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#7 Declaration w/Exhibit
8/1/96
V Hart

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	
Stan Hockerson	Art Unit: 3208
Serial No.: 08/400,336	Examiner: T. Kavanaugh
Filed: March 8, 1995	
For: INDEPENDENT IMPACT SUSPENSION ATHLETIC SHOE	

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on 7/23/96 R E Backus.
Richard E. Backus, Reg. No. 22,701

Signed: R E Backus Date: 7/23/96

DECLARATION OF STAN HOCKERSON

Stan Hockerson declares and states as follows:

1. My name is Stan Hockerson and I am the inventor in the above-entitled patent application.

2. I have 17 years of experience in the design of athletic shoes, including running shoes. My experience includes work either as an employee or consultant in designing athletic shoes for Mizuno Shoe Company; Avia Shoe Company; Ektelon Inc.; Brooks Shoe Company; ProMove Company; and Z-Tech Company. Throughout my career in this field I have consulted with and designed athletic shoes for the following professional baseball players: Jose Canseco while an outfielder with the Texas Rangers; Willie McGee while an outfielder with the San Francisco Giants; Darren Lewis while with

the Giants; Matt Williams who is now the Giants' third baseman; and John Kruk, first baseman for the Philadelphia Phillies.

3. I was the first person in the athletic shoe industry to use a motion analysis treadmill machine for studying the gait of a runner wearing athletic shoes. The procedure has now been widely adopted throughout the athletic shoe industry. Such a machine was used to derive the data represented by the chart of Fig. 6 in the above-entitled application.

4. The tests which I conducted using the motion analysis treadmill machine involved the participation of 45 different runners. Each of the runners was requested to bring a pair of his or her running shoes for the test. The brands of the different shoes included shoes made by Avia, Reebok, New Balance and Nike. The runners each ran barefoot on the treadmill while the machine measured the times of heel strike to loading phase (neutral position). The runners then ran on the treadmill wearing their own running shoes while the machine recorded heel strike to loading phase measurements. I then cut a longitudinal channel in the midsole and outsole of the heel portion of each of the shoes with the channel extending upwardly through the sole to divide it into medial and lateral compression elements in accordance with twice amended claim 1 of the subject application. With each of the runners wearing their own shoes modified in this manner, they again ran on the treadmill with the machine recording heel strike to loading phase measurements.

5. The accompanying Exhibit 1 entitled "Motion Analysis Findings" is a listing of the elapsed time from heel strike to loading phase that was recorded on the treadmill machine in testing the 45 different runners that resulted in the chart of Fig. 6. Exhibit 2

is a bar graph which compares the average speed from heel strike to loading phase for the three traces on the Fig. 6 chart representing the barefoot runners, runners wearing conventional athletic training shoes, and runners wearing the shoes modified as stated above in ¶4.

6. I have read and understand the Clarke U.S. patent 4,439,936 which was cited in the office of April 26, 1996 in this application. The Clarke patent discloses several embodiments of athletic shoes which are of the "cantilever" type. Cantilever type athletic shoes are characterized in having traction elements or cleats on the lateral and medial edges of the shoe's outsole. The cleats at the heel of the Clarke outsole are identified in the patent by reference numerals 114 and 112. Additional traction elements in Clarke include the pair of wear plugs 122 in the heel which are separated by a shallow gap 136.

7. The accompanying Exhibit 3 (Fig. A) is a sketch comprising a rear elevation view of a shoe according to the embodiment of Figs. 1-8 of Clarke and made for the right foot. The reference numbers correspond to the Clarke patent and include the midsole 16, the outer sole 100, the lateral wear plug 122, the medial wear plug 122′ and the gap 136. The shoe is shown contacting a running surface during the initial heel strike phase.

8. Exhibit 4 (Fig. B) is a rear elevation view of a right shoe made in accordance with the embodiment shown in Fig. 5 of my patent application. The lateral side is shown making contact with the running surface during the initial heel strike phase and thus is comparable in the heel strike position of the Clarke shoe represented by the sketch of Fig. A. The reference numerals in Fig. B correspond to Figs. 3 and 5 of my application and comprise a midsole 30, an outsole 32 and a gap or channel 46 which separates the

midsole and outsole into the pair of compression elements 48 and 50.

9. Exhibit 4 (Fig. C) is a sketch of a transverse cross section through the heel portion of the outsole corresponding to Fig. 8 of the Clarke patent but representing a shoe for the right foot during the heel strike phase.

10. Exhibit 4 (Fig. D) is a sketch of a transverse cross section along the heel portion of a right shoe of my invention and corresponding to Fig. C showing the midsole and outsole during the heel strike phase.

11. During the heel strike phase of the shoe of the Clarke patent the midsole, because it is a solid slab of resilient material, results in the downward impact forces at 17 causing the lateral side of the midsole material to compact and bulge outwardly at 18 (Exhibit 3, Fig. A). The effect is to pull the midsole material to the lateral side as shown by the arrow 16, and this in turn pulls the medial portion of the midsole to the lateral side as shown by the arrow 16′. The shallow groove 136 which is cut solely through the outer sole of Clarke has no effect in stopping the lateral pull of the midsole material at 16 and 16′. As a result, the groove has no effect on stopping the downward pull on the medial side of the shoe at 16″. The comparable forces acting on the shoe of my invention as shown in Exhibit 3 (Fig. B) are that the downward impact forces at 17 cause the midsole material in the transverse compression element 50 to bulge outwardly. This results in only the midsole material in the lateral compression element to be pulled toward the lateral side as indicated by the arrow 18. In my invention the medial compression element 48, because it is almost completely separated from element 50 by the gap 46, has substantially no reaction to the forces acting on the lateral side.

12. Therefore the channel 46 of my invention isolates the two compression elements so that the element on the medial side substantially does not react to the forces in the lateral side created by the downward impact forces. In a shoe made according to the Clarke patent, on the other hand, the gap 136 in the outsole has no effect on stopping the downward pull in the midsole on the medial side of the shoe.

13. In a cantilever type athletic shoe of the Clarke patent no traction cleats are provided in the area between the lateral cleat 114 and medial cleat 114′. This is represented by the area 124 shown in Exhibit 4 (Fig. C). The Clarke patent describes this area 124 as comprising a "rear shock attenuating area," and the patent explains at column 5, lines 42-50, that the shock attenuating area, during foot strike, depresses slightly on the dot-dash line 113 in Fig. 8 of the patent. The purpose of this, according to the Clarke patent, is to spread the force of impact which is transmitted to the foot over a slightly greater period of time, thereby delaying the attenuation action and reducing the severity of the force of foot strike. This also has the undesirable effect of causing the outsole to react like a cantilever. The result is that the downward motion on the medial side of the shoe is accelerated over that of a non-cantilever running shoe, such as in the shoe of my invention.

14. The distinction in heel-strike acceleration motion of my invention from an athletic shoe designed according to the Clarke patent is shown graphically in the chart of Fig. 6 of the above-entitled application. In that chart line 60 plots the time from heel strike to loading phase for prior art athletic shoes, which include the type of cantilever shoes similar to the Clark patent. Line 62 of Fig. 6 plots the comparable time for shoes

incorporating my invention. A comparison of the two lines shows that the time from heel strike to loading phase for my invention is longer, and this means that downward motion of the heel portion of a shoe according to my invention accelerates less than cantilever type shoes such as in the Clarke patent.

15. I have read the Miller U.S. patent 4,939,851. It describes the use of a lasting board made of rubber. Based upon my knowledge and experience, such a rubber lasting board has not been incorporated into athletic shoes of the type to which my invention is directed.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 7 - 19, 1996.

Stan Hockerson

Stan Hockerson

MOTION ANALYSIS FINDINGS

THE FOLLOWING DATA DELINEATES THE FINDINGS OF A MOTION ANALYSIS STUDY INVOLVING 45 SUBJECTS. THE SPEED FROM HEEL STRIKE TO LOADING OR NEUTRAL PHASE OF EACH SUBJECT WAS DETERMINED BY A MOTION ANALYSIS CAMERA. FURTHERMORE, EACH SUBJECT WAS TESTED THREE TIMES; FIRST **BAREFOOT, SECOND IN **CONVENTIONAL TRAINING SHOES** AND THIRD IN SHOES UTILIZING THE **INDEPENDENT SUSPENSION** CONCEPT.

			Time elapse from heel strike to loading phase		
subject #	height	weight	barefoot	conventional shoe	indep. suspension
1	5'5	118	.152	.127	.146
2	5'10	155	.150	.126	.144
3	5'10	156	.152	.125	.141
4	5'11	166	.147	.125	.139
5	5'8	150	.146	.121	.137
6	5'6	135	.151	.126	.142
7	5'9	147	.148	.121	.141
8	5'9	147	.149	.122	.142
9	5'10	149	.148	.122	.139
10	5'10	141	.150	.126	.144
11	5'8	152	.152	.127	.146
12	5'9	150	.151	.125	.147
13	5'9	153	.152	.125	.147
14	5'10	153	.146	.120	.139
15	5'10	161	.149	.126	.138
16	6'0	167	.150	.125	.145
17	5'7	132	.146	.122	.139
18	5'7	133	.153	.126	.147
19	5'9	144	.152	.127	.147
20	5'11	160	.149	.122	.141
21	6'1	187	.151	.125	.146
22	5'4	108	.152	.125	.147
23	5'10	144	.150	.124	.147
24	5'9	152	.150	.121	.144
25	5'10	167	.153	.124	.147
26	5'8	141	.150	.126	.145
27	5'7	135	.148	.122	.140
28	5'7	141	.147	.123	.139
29	5'10	155	.154	.127	.148
30	5'9	151	.150	.125	.148
31	5'10	157	.161	.124	.142
32	5'11	171	.151	.125	.144
33	5'9	151	.151	.126	.143
34	5'9	144	.151	.125	.144
35	5'9	147	.152	.126	.146
36	5'9	150	.149	.124	.147
37	5'10	166	.151	.126	.147
38	5'8	149	.147	.122	.139
39	5'9	151	.149	.124	.140
40	5'7	131	.148	.123	.140
41	5'9	149	.151	.128	.147
42	5'11	162	.152	.127	.147
43	5'10	164	.152	.129	.144
44	5'10	157	.149	.131	.140
45	5'9	144	.151	.126	.145
AVERAGE			.151	.125	.145

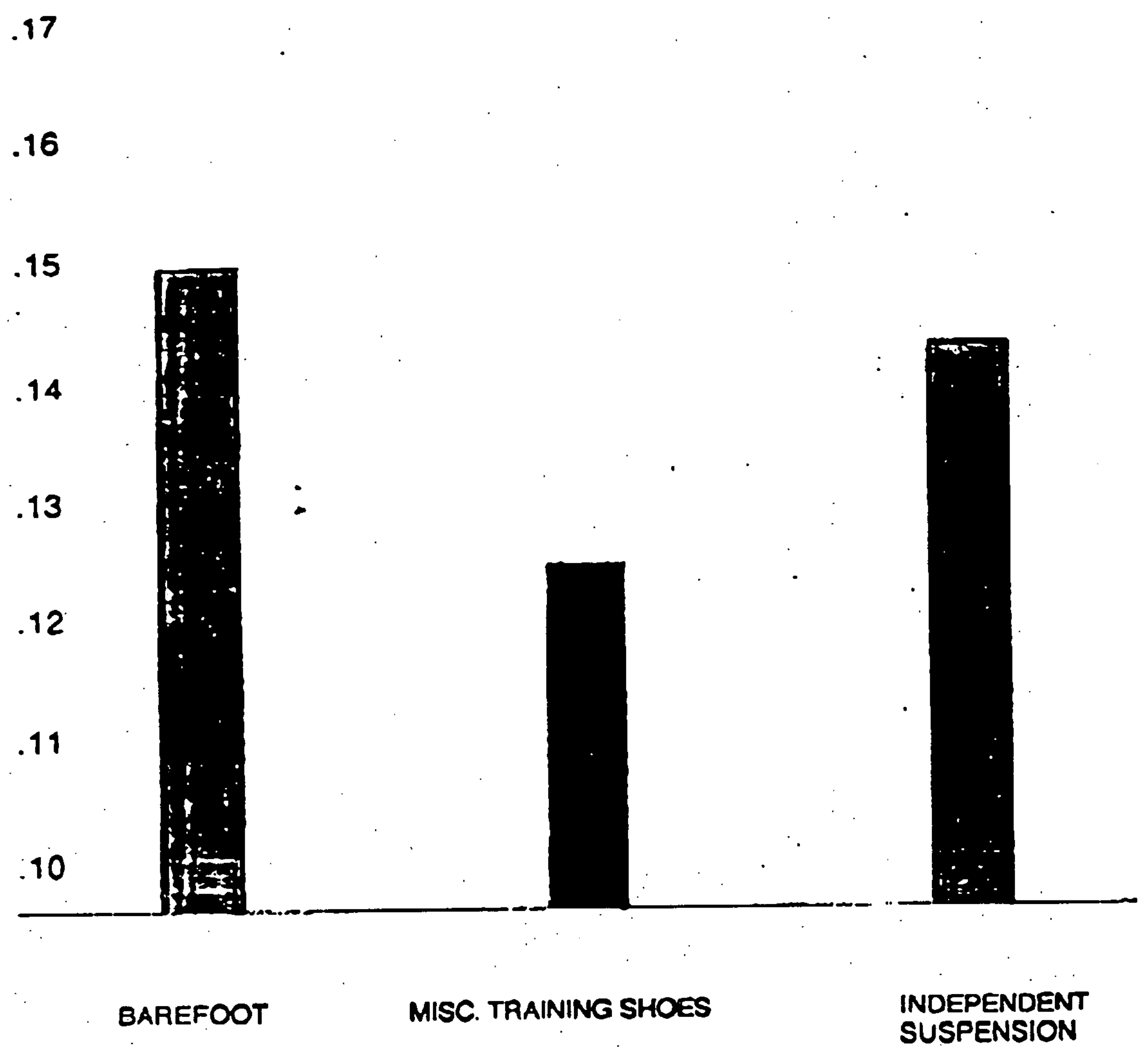
Exhibit 1

1

MOTION ANALYSIS

***Based on 14ml second per frame

45 runners tested



***AVERAGE SPEED FROM HEEL STRIKE TO LOADING PHASE

Exhibit 2

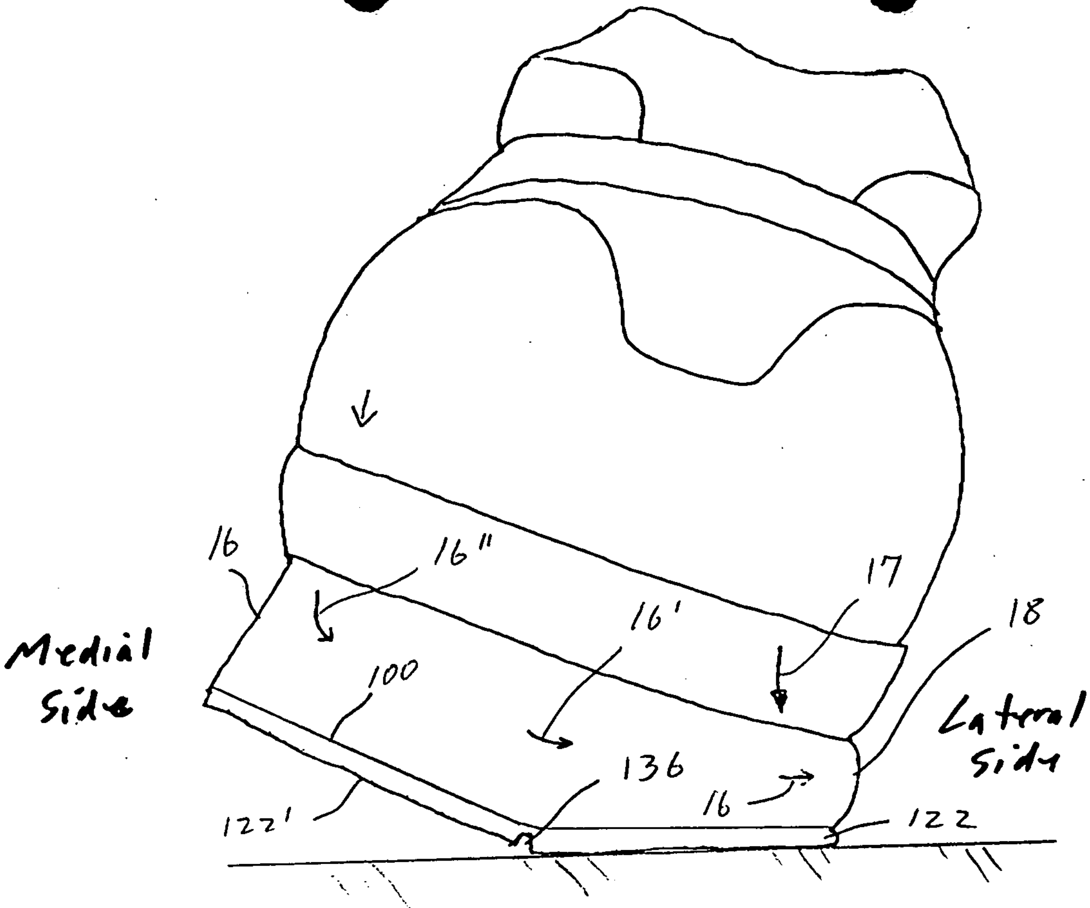


Fig. A Clarke '936 Patent

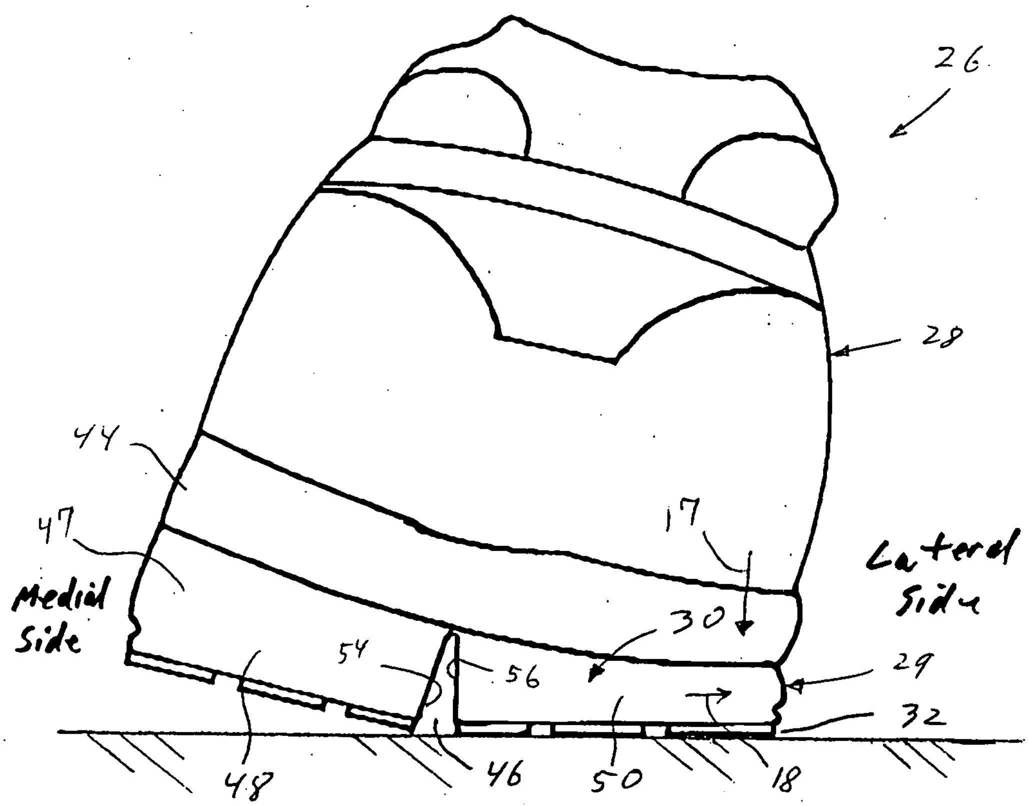


Fig. B - Hockerson Application

Exhibit 3

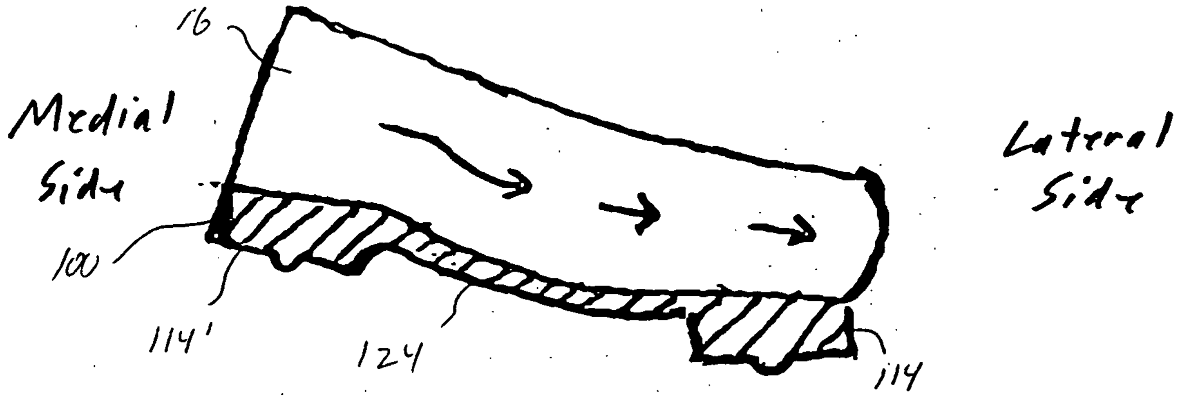


Fig C - Clarke '936 Patent

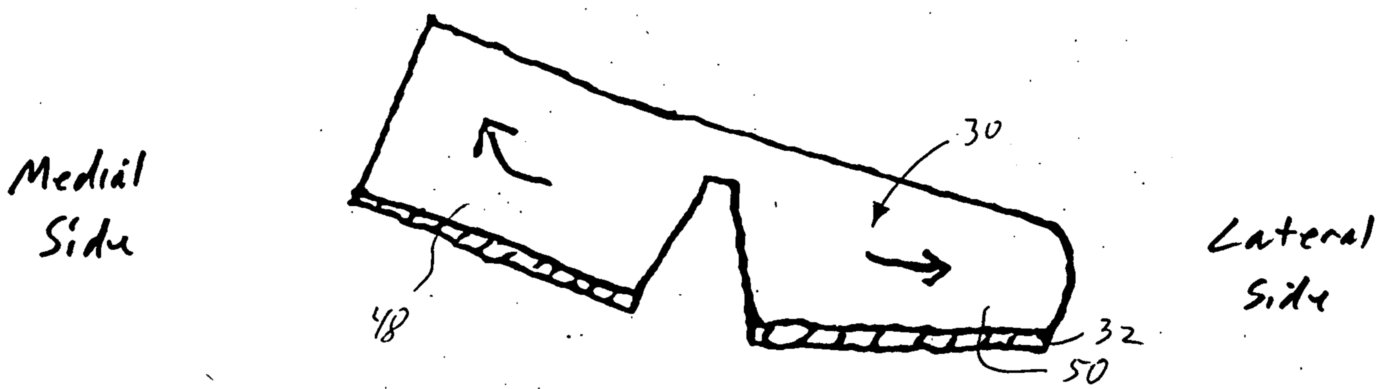


Fig D - Hockerson Application

Exhibit 4